



J U G

dePresident, WM2C

Ken's Pen

Happy New Year! I hope 1995 was a good one for you, lets hope for an even better one in 1996! I know the club has a lot to look forward to in 1996, with the WRTC taking center stage. As each month goes by, I'm sure all us will be spending more and more time on planning for the WRTC. Lets all do our best to make this one to remember!

As I write this, it seems like there has been some interesting propagation on both 160m AND 10m! For much of December, many west coast stations have been working into Europe on 160m, even with relatively modest stations (shunt fed towers and slopers are common). It also seems that there has been wide spread sporadic-E on 10m, 6m, and even as high as 2m. While the high bands haven't been producing round-the-world propagation, sporadic-E sure tends to surprise a lot of people - and there have been lots of exciting openings on the low bands too. If 160m propagation continues as is, the upcoming CQ 160m CW contest at the end of the month is sure to be one of the best low band contests for years to come. Overall, I also think that the ARRL DX contests will be lots of fun with the improved low band conditions, and the not too bad high band conditions. In a recent magazine, I remember someone saying that if this is propagation at the bottom of the cycle, I can't wait for the next sunspot minimum!

The last meeting of 1995 was sure a fun one! For those of you who missed the annual holiday banquet, we sure had a great time. N6BT and his wonderful family deserve a round of applause for this years activity: Human Bingo! With a playing sheet of 5 x 5 squares, you had to go around the room to ask people if they were qualified to "sign the box" which gave you an "X" for that box (and you could only sign the sheet once!). The contesting instinct took over, and most people went for the clean sweep to fill in all the boxes (mults). Some of the tougher boxes were: Who has flocked a tree? Who has a QSL card from N6BT? Who has received a ticket for a traffic violation this month? The hardest box seemed to be: Who is wearing Christmas underwear? This is where operating strategy sure paid off. The only person in the room that was wearing Christmas underwear was not associated with the NCCC, it was the bartender! If I recall, around 10 people had clean sweeps. Though unconfirmed, I suspect that some packet spotting system had to be used, since its hard to believe that all 10 of you found the bartender on your own! Photos of the action at the 1995 NCCC Christmas Bingo can be found on page 9.

There's not too much else to report on due to the slowness of the holiday season. I wish you all a happy and healthy new year! 73,
Ken
WM2C

Contest Calendar

deK2NMM

January 6-7

ARRL RTTY Roundup

January 13-14

JA Int'l DX -- Low-Band CW
Lions Club Hunt
Kentucky QSO Party
Michigan QRP Club -- CW
DYLC (Dutch) Midwinter Test
No. Amer. QSO Party -- CW

January 20-21

ARRL VHF Sweepstakes
No. Amer. QSO Party -- SSB
QRP ARCI Sprint -- SSB

January 27-28

CQWW 160-Meter Test -- CW
UBA (Belgian) Contest -- SSB
REF (French) Contest -- CW

January 27 - February 4

QRP ARCI Novice/Tech -- CW

January 28 - February 28

CTARL 10-Meter Test -- FM

February 3-4

No. Amer. Sprint -- SSB
No. New England QSO Party
10-10 QSO Party -- SSB

February 10-11

QCWA QSO Party -- CW
No. Amer. Sprint -- CW
PACC (Dutch) Test
IRDA WPX Test -- RTTY
RSGB 160-Meter Test
YL-OM Test -- SSB

February 17-18

ARRL DX Test -- CW

February 24-25

CQWW 160-Meter Test -- SSB
REF (French) Contest -- SSB
UBA (Belgian) Contest -- CW
YL-OM Test -- CW
No. Carolina QSO Party

March 2-3

ARRL DX Test -- SSB

This Month's Scores

CQP County Catg Mult Score QSO CW
W6PYX PLAC SOL 45 44,865 380 237

CQWW Phone QSOs Mults Total
KH6RS (K6GSS+K16CG) 3349 385 2,875,660 M/S
WZ6Z 907 382 958,820 S/P
AA6KX 0 0 0

SS CW Score QSOs Sec Pwr Hrs Cat
AE0M (revised) 100,562 653 +77 B - S/O
W6PYX 79,624 538 74 A 23 S/O
N6RA 44,100 315 70 A - S/O
N1EE/6 (revised) 36,036 273 66 B 7 S/O

SS Phone Score QSOs Sec Pwr Hrs Cat
K6HNZ 209,594 2722 +77 B 24 S/O
W6PYX 142,912 928 +77 A 23 S/O
W6SUN 101,948 662 +77 B 13 S/O
W6BIP (revised) 79,344 522 76 B 18 S/P
W6PLJ 28,840 206 70 A 14 S/O
N6RA 11,712 122 48 A - S/O

CQWW CW QSOs Mults Total
AA6MC (+AC6NS) 512 314 433,948 M/M
W6BIP 317 273 228,774 S/O
AJ6V 412 190 211,470 S/O
AE0M 337 138 117,990
W6WB 181 151 72,631 S/O
W6PYX 158 112 48,160 L/P
W6PLJ 116 104 30,056 S/O
W6ISQ 66 40 2,640
AA6KX 2 4 16

ARRL 160-Meter QSOs Mults Total
AA6KX 549 76 93,708 S/O
N16T 350 74 60,236 S/O
N6RO 318 76 51,300 S/O
W6BIP 189 55 22,275 L/P
K6LRN 164 42 14,400 L/P
K6KM 129 49 13,965

The Northern California Contest Club

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W6XR/2 103 45 9,810 S/O
WA8LLY 75 33 5,049 L/P
K6BPB 70 19 2,660
KD6KKP 40 20 1,600 L/P

ARRL 10-Meter QSOs Mults Total
KD6KKP (+WA6TKV) 370 57 55,632 M/S
WM2C 324 52 51,688 S/O
KG6LF 300 37 30,320 S/O
K6HNZ 298 41 24,436 SSB
AB6YL 182 40 22,720 S/O
W6ISO 135 24 9,312 S/O
AA6MC 86 25 7,700 L/P
K6BPB 102 14 5,320 S/O
N7STU 40 19 2,204
W6PLJ 52 12 1,872 S/O

Internet Sprint QSOs
N6TV 143
W6RGG 107
NV6O 101
N1EE 63
N6PN 59

NCCC TREASURER'S REPORT

Northern California Contest Club
 Treasurer's Report - 31 Dec 95

| Income Category | Budget | Actual |
|-------------------------------|--------|--------|
| Membership dues (note 1) | 4500 | 4038 |
| Advertisements | 300 | 300 |
| General fund contributions | 300 | 251 |
| Vanity callsign contributions | 70 | 51 |
| CQP contributions | 0 | 100 |
| Non-member | | |
| JUG subscriptions | 0 | 18 |
| Total income | 5170 | 4758 |

| Expense Category | | |
|---|--------|-----|
| JUG publishing & special mailings (3620) | (1318) | |
| NCCC share of CQP expenses (note 2) (500) | | 968 |
| Membership awards | (650) | (0) |
| Visalia Hospitality | (100) | (0) |
| Vanity callsign for club call | (70) | (0) |
| CQWW, WPX etc. awards | (125) | (0) |
| Contingency | (105) | (0) |
| Self-funding activities | | |
| (Banquets, badges, etc.) | (0) | 10 |

| | | |
|----------------------------|--------|-------|
| Total expenses | (5170) | (340) |
| Present General Fund Total | 7594 | |

Membership dues have fallen short of the projected amount, because there have been more people than expected (19!) who have not maintained their memberships. This will also reduce the JUG expenses, however.

To date, CQP has been a big money maker... we've received over a thousand dollars in checks. This trend will reverse when we begin to purchase and mail awards!

Respectfully submitted,
 George Daughters, AB6YL
 31 Dec 1995

AA6KX Chuckle

Contester Detained by Pleasanton Cops!

When we left the hotel in Pleasanton this evening I had an interesting encounter with the Pleasanton police. I walked across Main St. to get to my car. As soon as I got to the sidewalk on the other side of the street, a police car pulled up quickly next to me and the shotgun cop jumped out and demanded, "What's going on here?". I initially thought they were going to hassle me for jaywalking (I cut across the street diagonally about 50' away from a crosswalk). I told him I was just on my way home. The guy seemed real huffy, and I quickly realized they weren't hitting me for jaywalking.

At the same time, I noticed Tony and Celia walking down the sidewalk on the other side of the street. The cop asked me what I had been doing, and I told him I had been with "those people over there" all evening. That obviously made no impression with him. At that point, several things entered my mind simultaneously:

(a) this could turn out to be a chance to enter litigation lottery and maybe make some money in a lawsuit;

(b) I would need some witnesses if anything controversial developed;

(c) if nothing else, it could be entertaining to taunt these cops.

That was when I motioned to you, Tony and Celia, to come over and join me. I really want to thank you for coming on over; I honestly appreciate your willingness to help.

As it turns out, somebody had called the police reporting that a man in a grey suit was engaged in a fight with a woman in front of the Pleasanton Hotel. From the police perspective, there were not a whole lot of candidates at that time of night dressed in a grey suit out in front of the Pleasanton Hotel. In other words, they were reasonably certain they had their man.

The conversation which ensued pointed out to me one more time just how little I know about a suspect's rights. Several times in my life I've tried to get an education on this subject and never been successful. I really wanted to push these guys to the limit tonight, but without knowing the rules of the game I had to back down. Somewhere along the line I hear one of them tell me "you aren't going anywhere until we say you can". That was the point at which flags went up and I started thinking of Rodney King's millions. I immediately asked him if I was under arrest. He replied I was not, but I was being "detained". I replied that if I was not under arrest, then I must be free to go.

He insisted I was not. Then entered into a discussion with them on the semantic difference between "arrested" and "detained". At that point, I realized I didn't have a clue how far I could push these guys without stepping over the line into illegal behavior. The cop then demanded identification from me. Was I required to produce it? I didn't know. I debated whether to refuse, then decided that refusing just might cross the line. While I was dancing around with these cops trying to figure out how to antagonize them into doing something to me without actually doing anything illegal myself, they got radio confirmation that I wasn't their man and let me go. Damn.

So I'm still left wondering: where do I go to learn what my rights are as a suspect and what is required of me when I am stopped by the police. Did I have to produce an ID? Was I required to stop when they advised me I was being detained? If so, how long can they detain me without arresting me? And if I am ever placed under arrest, what (besides the Miranda briefing) are they required to tell me? What rights to search do the police have when I am merely being detained? Arrested? If I had been in a car, would I have been required to let them search the car if I was merely being detained? Arrested? And so on the list of questions goes. I really would like to be better prepared the next time an opportunity like this comes along! Do you know of any good sources for answers to these kinds of questions?

AA6KX Bruce

Next Meeting:

Don, N6IPE, will be giving a presentation on remote station design, based on his work at KD6UO's Alameda station. If you have received your January QST, you will see a neat article by Don. At our meeting, Don will go into more detail, and if all goes well, he will be giving a **LIVE REMOTE DEMONSTRATION** of the station! If you don't know Don, he is a very talented engineering designer, and this should be a great presentation - one not to miss!

The official meeting will begin on Friday, January 19th, at 7:30 PM (with Pizza at 6:30). The location will be at the familiar H.P. Santa Clara Location, at 5301 Stevens Creek Blvd, Santa Clara. This is at the northeast corner of the intersection of Lawrence Expressway and Stevens Creek Blvd. Pizza from W6OAT's Give Pizza Chance will be served at 6:30. See you all there! Ken WM2C

Johns Jottings

SWEEPSTAKES UPDATE

Since last month's JUG, the SS log deadline has come and gone. A few more scores have trickled in -- see the Scores column -- and they bring our club total to 8,272,294.

This is a fair bit short of last year's record-breaking score of 11.2 Meg, but still ahead of SCCC's previous 6.9 Meg score. Needles to say, it's not time to celebrate yet. The SCCC has been ramping up their efforts over the years, and they're quite capable of having closed the gap. Also, our total reflects scores gathered from many sources, and it can easily differ from the official total compiled by the ARRL. For example, last year our January estimate was 200k below our official score.

Guess we'll just have to wait 'til we see the results in QST next May!

CQ WORLDWIDE DX

The CQWW scores reported so far total about 19.5 Meg, and there certainly are additional WW scores for the NCCC that have not been reported -- yet. The deadline for the club submission is January 15, so, if your WW score hasn't appeared in this month's JUG or in the previous two, please send it to me ASAP. Thanks!

160-METER AND 10-METER TESTS

Although the ARRL 160-meter test has had club competition for some time, this is the first year that the ARRL 10-meter test does too. Remember, if you played in either of these tests, please indicate on your summary sheet that your score counts for the Northern California Contest Club.

In the 160-meter test, it looks like Bruce/AA6KX blew all other NCCC'ers away with 549 Qs and 76 mults for a total of 93.7k. Bruce's antenna is a full-size dipole strung across his canyon, and it's a big part of why Bruce hears and gets out so well on the top band. Congratulations, Bruce! Great job!

In the 10-meter test, Jenny/KD6KKP and her dad Ray/WA6TKV did multi-op for the top NCCC score. Their 55.6k (370/57) score nosed out our esteemed (steamed?) President Ken/WM2C's 51.7k (324/52). Congratulations, Jenny! Hope your dad picked up a few tips from watching you operate!

INTERNET SPRINT SETS NEW RECORD

The ninth running of the two-hour Internet SPRINT happened on Wednesday evening 12/17. This is the first time it's been held on a weeknight, and participation was great! So far, 47 logs have been received, breaking the previous record of 45 set in July 1994. NCCC participants included N6TV, W6RGG, NV6O, N1EE, and N6PN.

This is the first running that Big Sprint heavies KR0Y and KM9P got on in a serious way and actually sent in logs! There's been a lot of speculation in the past about how well these guys would do if they really tried. Unlike most contests, busted Qs are removed from both the TX and RX station's logs.

So, if you send too fast, you may lose a lot of Qs on the other end, even though you've copied everything OK on your end.

How will this affect these QRQ wizards' scores? I can't wait to find out either! That's why I'm gonna start crunching the logs just as soon as I finish this JUG column! Look for final results to be posted on CQ-Contest in the next week or so. If you don't subscribe to CQ-Contest but would still like a copy of the results, send e-mail to k2mm@maspar.com and I'll forward you a copy.

SEND ME YOUR SCORES!

I will take your scores for publication in the JUG and pass them along to AI/AD6E for 5-Meg credit. Send them to K2MM by packet, telephone, e-mail, or even snail-mail. Here are the addresses:

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Kenwood TS870 Review by W2SZ

Thought everyone might be interested in my review of the TS870, plus a few contest notes regarding my own station. Here it is:

I bought a TS870 a few weeks before CQWW SSB and used it exclusively (mostly because I didn't have a good switching arrangement to share the Alpha 87A between the 870 and the 950). Its a great radio...but a few caveats.

First of all, there is no provision for using a beverage. There are two front panel switch selectable antenna terminals, but no way to allocate one to receive and the other to transmit. There is also a provision to share either of those antenna inputs (the active one) with another receiver. Not sure why Kenwood decided that half of the capability would be more popular than use of a separate receive antenna, but they did. Anyway, it requires a relay switching setup to use your receive antennas.

Secondly, the internal voice keyer, which sounds very good and is easy to use, has about a half second delay that doesn't seem to be programmable. The VOX delay is set on the front panel, but not this insidious delay after playing one of the four DVK (actually DRU-3) memories. Totally useless for sending your call in pileups. Marginally OK for CQing, but a little weird.

Also, the four memory channels on the DRU-3 can only be remoted through the built-in serial port using Kenwood's obscure ASCII command set. No chance to hardwire it by using LPT keying on the computer. If CT is to control this device, Ken will have to write code to do it.

By the way, I was using CT 9.21 this time, because 9.26 crashed hours before the test and wouldn't restart properly. I set the RADIO config for a TS850 and connected the DB-9 port on the radio to the computer (actually through my Smart Antenna Switch to the computer). Everything worked fine: radio, antenna switch, CT. Everything worked, except ~~for the~~ I

Why an Antenna Radiates

You don't have to know how an antenna works to use one, but getting a handle on this subject can deepen your understanding of radio. Here's a searching look at the mysterious process by which our antennas hurl energy from Here to There.

by Kenneth Macleish, W7TX

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Part I

If antennas didn't radiate, we might be well advised to dispose of our ham gear and take up another hobby. Fortunately, they do radiate. Our purpose here is to explore the basic principles underlying this wonderful and little-understood phenomenon.

Before starting, let's try a simple test to see how much you already know about antennas. Don't peek at the answers until you have answered all the questions!

1. In a center-fed, half wave dipole, electrons surge back and forth from one side of the antenna to the other.

True _____ False _____

2. It is possible for a perfect insulator to radiate.

True _____ False _____

3. Unlike ohmic resistance, "radiation resistance" has significance only at the feed point of an antenna or antenna system.

True _____ False _____

4. The ground around a transmitting antenna radiates.

True _____ False _____

If you got all the answers right, you probably know more than the writer, and you have permission to skip the rest of this article.

An Imaginary Experiment

Take a pithball about the size of a marble between your thumb and forefinger. If you don't know what a pithball is, or can't find one, a hunk of plastic foam or a ping pong ball will be fine. For lack of a better name we will refer to any of these articles as a pithball. Rub the pithball on your carpet to give it a good electrical charge. Now wave the pithball back and forth in the air over a six inch distance as fast as you can. The pithball is sending out electromagnetic waves! Let's say you are achieving a rate of 10 cycles of motion per second. If you have placed in the corner of the room a sufficiently sensitive megameter-wave receiver, it will detect a signal when tuned to a frequency of 10 hertz, or to a wavelength of 30 million meters.

If you could vibrate your hand fast enough you might even be able to carry on radio communication in this fashion!

We will continue this experiment shortly. Meanwhile let's take a look at what goes on inside an antenna.

Put Your Antenna Under a Microscope

Now, admittedly the average antenna doesn't contain any pithballs. But it does contain hordes of minute, lightweight, electrically charged particles called electrons. Many of these are so called free electrons that have broken loose from their parent copper or aluminum atoms and are able to travel more or less freely through the spaces between atoms, under the influence of any electric fields that may be present. The free electrons behave in many ways like tiny pithballs.

We know that an electric current in a conductor is simply a mass migration of free electrons. If the current is alternating, as in an antenna, the free electrons in a given locality move back and forth in unison. Evidently, then, any individual electron moves to and fro around an average position, like the pithball in our experiment. Let's see how far and how fast this electron might travel.

Consider an antenna made of #12 copper wire and operating at 14.1 MHz. Each free electron near the surface of the wire is executing 14.1 million cycles of motion per second. Knowing the number of free electrons per cubic inch of copper, the electric charge on each, and the depth of RF penetration into the wire (The skin depth), we can calculate the peak speed of an electron at a place where the RMS antenna current is, say, one ampere. The result comes out to be less than half an inch per second. At that rate the electron doesn't move very far during each half cycle of vibration: its peak to peak travel is no more than a hundred-millionth of an inch. In the eyes of an electron this distance is quite respectable, being tens of thousands of times its own diameter. The answer to question 1 above, though, is clearly "False". Not one electron makes it through the feed system from one side of the antenna to the other.

We can compute the electron's deceleration and acceleration, which are greatest when the electron is coming

to a stop and then starting up in the other direction. At an antenna current of one ampere, these quantities reach more than 50,000 gs! And an accelerating or decelerating charged body, be it an electron or a pithball, is a source of electromagnetic radiation.

A pithball is a pretty good insulator, and so, presumably, is an electron. So the answer to question 2 is "True": a perfect insulator can radiate.

Let's return to our imaginary experiment. This time, instead of waving a pithball at 10 hertz, we'll pretend to vibrate a single electron at radio frequency and examine the resulting fields.

Fields of a Vibrating Electron

The detailed structure of an electron is unknown, but for our purposes it doesn't matter; we can assume that our electron is a little round ball with an electrical charge distributed uniformly over its surface. We determine the fields by solving Maxwell's equations at all distances from the electron, right down to its surface. This analysis is not an exercise for the faint hearted. We'll skip the details and concentrate here on the results.

The Coulomb Field

Grasping the electron in, say, a tiny pair of tweezers, let's start by holding it still. After a while the only field present will be a stationary electric field that points outward in all direction from the electron. The field lines take the form illustrated in Fig 1 for both positive and negative charges. This called the coulomb field. It is always present, regardless of whether the electron is in motion. We'll find later that the coulomb field plays a vital role in the operation of antennas.

With vibratory motion, two new fields make their appearance.

The Magnetic Field

A moving electron constitutes a current, and a current is always surrounded by a *magnetic field*. As if hitchhiking, point the thumb of your right hand and the direction of the electron's motion; then your curled fingers represent the circular lines of the magnetic field around the electron. Point your thumb in the opposite direction and you see that the magnetic field reverses, so a vibrating electron gives rise to an alternating magnetic field. At the electron's surface, the magnetic field is almost exactly in phase with the electron's speed, but as we move away, the phase of the magnetic field begins to lag. Out to a radius of $1/6$ wavelength, the phase lag is small. Beyond this radius, the lag starts to increase at a more rapid rate and soon settles at 360 degrees per wavelength of distance.

The Dynamic Electric Field

The second new field is an electric field that results from the electron's acceleration. Because of its dynamic origin in contrast to the electrostatic nature of the coulomb field—we'll call this field the dynamic electric field. It's useful to regard the dynamic electric field as the sum of two separate fields, one of which is in phase with the magnetic field and the other 90 degrees out of phase. We will call the in-phase component the radiation field and the out-of-phase component the induction field. It is the radiation field that carries energy from the antenna into the surrounding universe.

Fig 2 shows an area the size of a football field in which a lone electron, greatly magnified, is being vibrated at 14.1 MHz. The figure is a snapshot of the electron's radiation field taken at an instant when the electron is at the center of its travel and moving to the right, as indicated by an arrow. The curved arrows show the direction and strength of the radiation field. The dashed circles represent spherical wavecrests on which the field is at a local maximum. As we go outward from a wavecrest, the field decreases to zero, then reverses and rises again to the next wavecrest. Like ripples in a cosmic pond, these spherical waves are expanding outward at the speed of light, 300 million meters per second.

At any one point, the radiation and induction fields vary as sine-wave functions of time. About $1/6$ wavelength away from the electron (Actually $1/(2\pi)$ wavelength), in a direction at right angles to the line of motion, the two fields are equal in amplitude. As we move farther away, the induction field falls off so much more rapidly than the radiation field that we soon have essentially nothing but the radiation field.

Inside a vacuum dielectric coaxial transmission line carrying power in one direction, the ratio of the electric to the magnetic field is equal to 377 ohms. In our pure radiation field, which carries power in the same manner even though there is no physical conductors present, this ratio is likewise equal to 377 ohms—a value that is sometimes called the characteristic impedance of space.

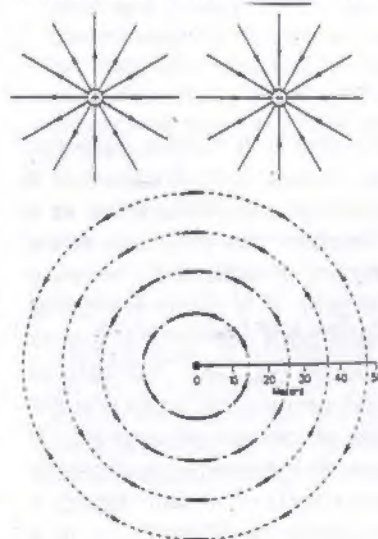


Fig 1 Always present around a charged particle, the coulomb field plays a vital role in energy radiation.

Figure 2 The radiation field of an electron vibrating at 14.1 MHz. Each broken line represents a wave crest.

Part II Next Month

transmitted on 15M and got terrible RFI in the computer. Ferrite core on the keyboard cable fixed that!

The DSP is amazing. It often made it possible to copy signals, especially when QRN was bad (lots of line noise and other junk in these urban jungles). The selectable upper and lower skirts on the SSB bandwidth controls is very good, but I didn't find it pulled stations out of loud adjacent QRM any better than the crystal filters in my 950. In fact, I really missed the SSB SLOPE TUNE on the 950.

The DSP notch filter is several orders of magnitude better than conventional units on previous radios. In fact, you forget there is even a carrier. It tracks it/then and leaves you with a solid signal to copy. Very nice.

So that's my humble opinion. I'm not usually big on SSB tests, but really wanted to test the rig and get my station ready for CW. I'll report more after the "real" contest!

By the way, I'm also making some other changes here. I've pulled down the lower 4 element 10 and 15 meter beams, putting up a KT34XA in their place on the ring rotor at 45 feet. My whole tower turns, so the ring rotor lets me point that antenna in a separate direction from everything else. I have another KT34XA to put where the upper 4 element 10 and 15 meter beams are now (they are at 85 and 95)...probably at 90'. This will give me a switcheable stack on 10/15/20 using the WX08 Unun box, which I've yet to install.

I'm very anxious to compare this tribander stack at 45/90' to my 6 element 20 at 135'. Terrain Analyzer software shows this should work very well at my QTH, where the base of the tower is at 580' elevation. The terrain slopes away towards JA and Europe, but then slopes up again to almost 1100' less than a mile away. The lower XA has been up for a few days as I write this (thanks to major help from N6EK) and it seems to be within one S unit of the big 20.

I've also put up two 160M dipole variants from tall Eucalyptus trees in our forest and hope for 20 or so mults on 160.

Oh yes, getting the Alpha 87A a few years ago really spoiled me. Using that and automatic band switching on antenna relays is a dream....except that the Alpha flips into standby if there's more than 100W reflected power for any length of time. With 1500 out, it doesn't take much SWR to get 100W coming back, so I'm having to use antenna tuners where I didn't before. So the speed of all the automatic band switching is lost when I have to retune the tuner. The solution has been to buy a couple of used MN2000 tuners and keep them on the antennas that need them, so now it's all automatic again. See you all in the contest.

73, Howard WZ8Z

4M5X Contest Expedition to Venezuela

by WM2C

This year my team and I went back to Venezuela to do another KB M/S effort in the CQ VWW CW contest. We had been planning this contest for a year, and had gone to all lengths to make sure our planning and strategy would ensure us the number one spot in M/S - but then we heard that WN4KKN would NOT be doing his usual single-op entry at HC8N - Trey was also going to enter the M/S category. To make matters worse, Trey recruited 2 of the best domestic contesters around today: WX3N, and AG9A. While those names might not sound familiar to many of you, they usually operate at various super stations around the world, under different call signs. This was shaping up to be the M/S battle for a long time to come.

This year's station was a new one for our group (WM2C, WS4E, K0PP, KE7X, WX9E), and we really didn't know what to expect when we arrived. We were told it was a great location, but we were not prepared for the sights when we arrived! This was a gorgeous house on top of the tallest hill in the southern suburbs of Caracas - the city was some 1400M below us. The home belonged to Giovanni, YV5JDP. Giovanni had just finished installing the antenna system just a few months before we arrived. There are 2 towers built on top of a 3 story house (10m). One tower is 24m high (34m AGL) and the other tower is 18M high. The existing antennas consisted mainly of monobanders: 3 ele on 40m, 5 ele on 20m, 4 ele on 17m, 5 ele on 15m, and 5 ele on 10m. Our group installed a full size vertical for 160m off the tall tower, and an inverted-V for 80m on the other tower, as well as a C-3S loaned by Force 12, an R-7 vertical, receiving loop for 80/160, and a 40m delta loop. The goal was to have 2 antennas on each band, 10-40m.

The 3 stations were housed in a tiny room, which measured 2m x 3m (this is around 6' x 9')! I'm glad we were all buddies, since the conditions were VERY crowded. Changing ops at the main station (shown in the picture) just about meant you had to climb over one of the other operators. The station was about as high-tech as M/S stations go these days: we had 3 HF stations, connected via CT, with a Pentium Computer driving the RUN station. We also had HF packet from the US, and 2 packet clusters (US and EU) via the internet. The RUN station consisted of a TS850SDX and an Alpha 76A. The first MULT station was an FT990 and Drake L-4B, and the 2nd MULT station was a TS450S and small 300w amp.

The conditions were some of the strangest we have seen in the 4 years we have been going to Venezuela. 20m, which is usually open round the clock, was dead about 1 hour past sunset. This meant that we spent a lot more time on 40m than we had planned - but the 3 ele yagi sure helped that out! We were just about shut out on 10m, which is normally open to the USA for some great runs. In general, propagation didn't favor our location, since often we'd hear HC8N running the states at rates that were amazing.

4M5X ended up with around 11.6M points, and HC8N came in at 14.7M, which is a new world record (the old M/S record was 13.9M). Here are the final 4M5X stats:

| BAND | QSOs | PTS/QSO | ZONES | COUNTRIES |
|------|------|---------|-------|-----------|
| 160 | 196 | 2.94 | 16 | 47 |
| 80 | 490 | 2.94 | 24 | 95 |
| 40 | 2189 | 2.97 | 36 | 115 |
| 20 | 1249 | 2.95 | 32 | 110 |
| 15 | 1756 | 2.97 | 31 | 107 |
| 10 | 126 | 2.82 | 15 | 30 |

Tot: 5986 2.96 154 504 => 11,658,444 Points

I kept this article short, since I'll be giving a live talk with all the details at the February meeting on 4M5X, and M/S station design and strategy. 73, Ken WM2C

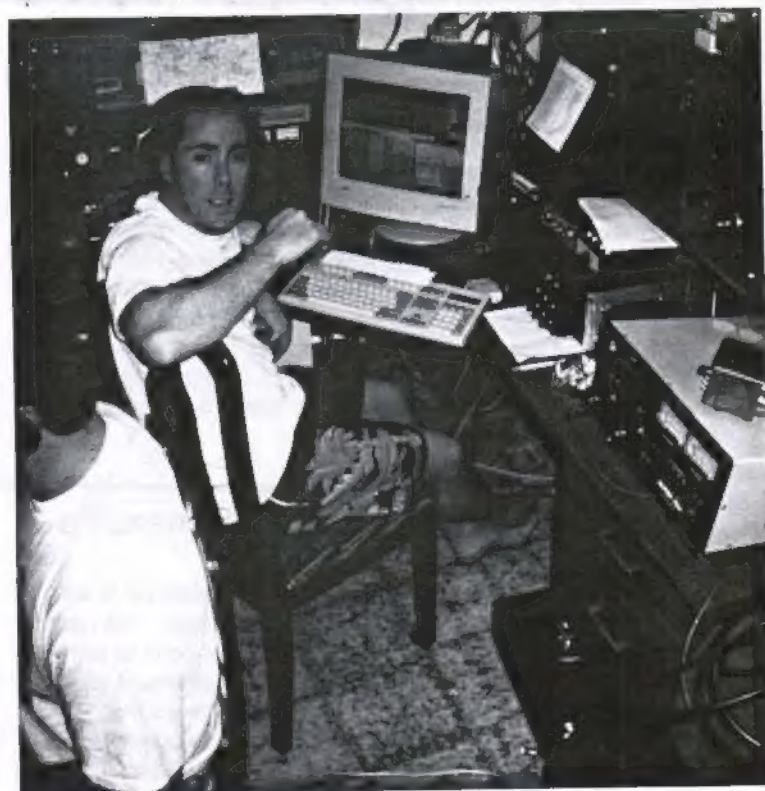
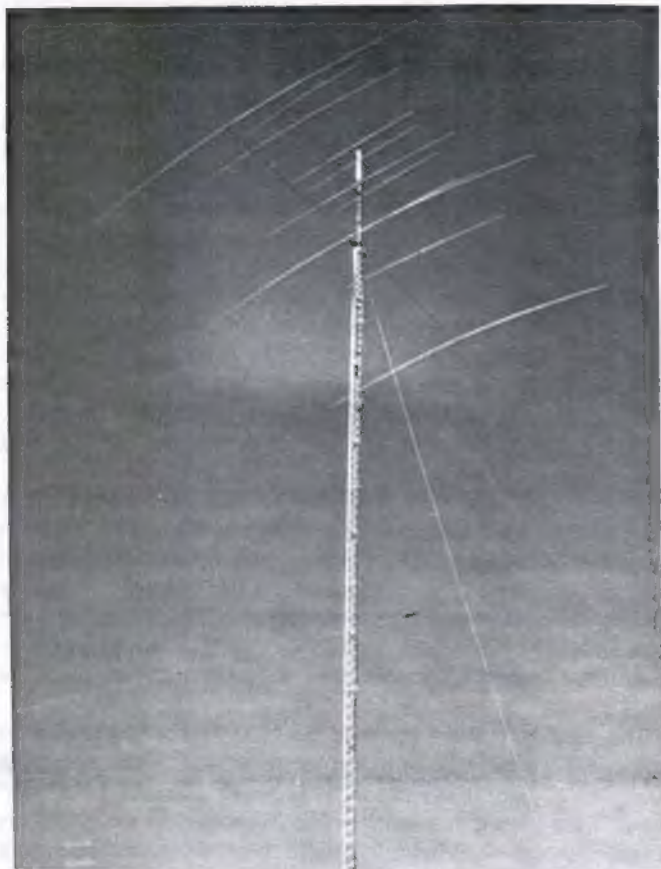
Photo 1: 4M5X 24M tower with monobanders for 40, 17, and 10M. You should be able to see the 160m vertical sloping off the top of the tower. The mountains are to the north of the station, and sit at about 5 degs takeoff angle.

Photo 2: WM2C on top of the house, with the city of Caracas 1400M below. (this hill is similar to W6QHS's QTH)

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Photo 3: An evening at the Radio Club Venezolano, YV5RCV. L to R is WM2C, KE7X, KØPP, OHØXX, and WX9E. OHØXX just happened to be in YV for a 40m single band entry as YV5A.

Photo 4: Main RUN station at 4M5X, WX9E op.







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